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SNR DENTON US LLP
P.O. BOX 061080
CHICAGO, IL 60606-1080

EXAMINER

BULLOCK JR, LEWIS ALEXANDER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAKEO EGUCHI

Appeal 2010-003189
Application 10/790,986
Technology Center 2100

Before ALLEN R. MacDONALD, SCOTT R. BOALICK, and
THOMAS S. HAHN, *Administrative Patent Judges*.

HAHN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant invokes our review under 35 U.S.C. § 134(a) from the final rejection of claims 1-4 and 9-20. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

Exemplary Claim

Appealed independent claim 1 is exemplary and reads:

1. A signal processing apparatus for receiving digital signals that are continuously related and input sequentially, performing a predetermined operation on each of sequentially input digital signals, and outputting a result of the operation, the signal processing apparatus comprising:

operation means for performing the predetermined operation on an input digital signal;

high-order part extraction means for extracting a necessary high-order part by rounding off a result of the operation performed by the operation means;

difference calculation means for calculating the difference between the result of the operation performed by the operation means and the high-order part extracted by the high-order part extraction means; and

feedback means for adding, to a next input digital signal, the difference value calculated by the difference calculation means or a value obtained by performing a predetermined operation on the difference value calculated by the difference calculation means,

wherein rounding off means rounding a value to a digit of an order which is higher than the lowest order digit of the value.

Rejections

The Examiner, under 35 U.S.C. § 103(a), rejected:

1. Claims 1-4, 9-13, and 17-20 as being unpatentable over a combination of Agrawal (US 4,272,648; June 9, 1981) and Denk (US 2001/0025292 A1; Sep. 27, 2001) (Final Action 2-7).
2. Claims 14-16 as being unpatentable over a combination of Agrawal, Denk, and Admitted Prior Art (i.e., Spec. pp. 1-5 (hereinafter “APA”)) (Final Action 7-8).

Claim Groupings

Appellant groups appealed claims 1-4, 9-13, and 17-20 and exclusively argues on the basis of independent claim 1 (App. Br. 4, 7-9). Appellant also groups dependent claims 14-16 and again exclusively argues on the basis of base claim 1 (App. Br. 4, 9-11). We, accordingly, select claim 1 as representative pursuant to 37 C.F.R. § 41.37 (c)(1)(vii).

Appellant’s Contention

Appellant contends the Examiner erred in rejecting claim 1 because Agrawal and Denk alone or in combination fail(s) to teach or fairly suggest the recited “rounding off . . . wherein rounding off means rounding a value to a digit of an order which is higher than the lowest order digit of the value” (App. Br. 7).

ANALYSIS

We reviewed the Examiner's rejections in light of Appellant's contentions, and we disagree with Appellant's conclusions.

Claims 1-4, 9-13, and 17-20

The Examiner acknowledges that Agrawal fails to teach or fairly suggest rounding off an input signal as recited in claim 1 (Ans. 4), but finds Denk teaches "rounding a [signal] value to a digit of an order which is higher than the lowest order digit of the value (e.g. component 840 in Figure 8 and paragraphs [0035-0040])" (Ans. 3-5). The Examiner concludes:

[I]t would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the rounding off means rounding a value to a digit of an order which is higher than the lowest order digit of the value as seen in Denk et al.'s invention into Agrawal et al.'s invention because it would enable to minimize or eliminate error in reducing wordlength (e.g. paragraph [0009]).

(Id.)

Appellant first contends that Agrawal and Denk cannot be combined "without destroying the intended purpose of Agrawal" and concludes, "Denk teaches away from Agrawal" (App. Br. 7). Appellant particularly asserts that "Agrawal purports to provide increased accuracy with respect to gain control by truncating or chopping off a portion of a number and adding the truncated portion to another number" (*id.*). Then, Appellant asserts Denk teaches reducing accuracy, which is "exactly the opposite of Agrawal" (App. Br. 8). Appellant argues:

Denk associates reducing precision with "rounding" by stating "rounding tends to introduce some form of precision reduction error." *See* Denk, para. 0041. Consequently, one of ordinary skill in the art would never have modified Agrawal with a process that would decrease accuracy such as "rounding," as argued by the Examiner, because such would destroy the intended purpose of Agrawal.

(*Id.*)

The Examiner disagrees and explains:

[Appellant] has mis-understood the concept[] of "reducing precision of data" as [being] part of [a] rounding process, but rather the concept[] of "reducing precision of data" is the overall architecture of the [Agrawal] invention which [is] reducing the input data size from X (size m) to X' (size [m-n]). Reducing the input data size [as taught by Agrawal] is also reducing precision of input data which has nothing to do [with] the rounding process. The rounding process would actually improve the [Agrawal] reduced precision input data by either minimized or eliminated rounding error as clearly disclosed within many [Denk] passages including the abstract and summary of the invention [*see* Denk ¶ [0009].

(Ans. 11.) Based on our review of the record, we agree with and adopt the Examiner's above identified findings from Agrawal and Denk and also agree with and adopt the Examiner's conclusion that combining Agrawal and Denk "improve[s] the intended [Agrawal] purpose by reducing/eliminating error during [Agrawal's] truncating or chopping-off process" (*id.*).

Accordingly, we disagree with Appellant's contention that Agrawal's intended purpose would be destroyed if combined with Denk's rounding teachings. Further, we agree with the Examiner that Denk is silent

concerning “express[]ly or inherently prohibit[ing] the combination” (*id.*) and, therefore, Denk does not teach away from Agrawal.

Appellant secondly contends the Examiner’s logic for combining the references is flawed (App. Br. 8) by arguing: (1) the relied on Denk disclosure in paragraph [0009] that “errors due to rounding are minimized or eliminated” fails because there is no “nexus” with the remaining Denk disclosures; (2) rounding to minimize or eliminate error is nonsensical since “rounding does exactly the opposite by creating a less accurate result;” and (3) Denk’s paragraph [0009] disclosure would not motivate modifying “Agrawal from a chopping-off process to a rounding process.” The Examiner responds: (1) Denk “clearly provide[s] nexus between ‘rounding’ and the remaining disclosure, particularly Figure 3” (Ans. 12); (2) the rounding process minimizes or eliminates errors resulting from truncating as addressed *supra* (Ans. 12-13); and (3) a chopping-off or truncating process introduces error, whereas also using a rounding process minimizes or eliminates that error, i.e., Agrawal’s truncating process is modified to *include* Denk’s rounding process. Again, based on our review of the record, we agree with and adopt the Examiner’s identified findings from the references and conclude that the Examiner’s combination of the references is not flawed.

In the Reply Brief, Appellant continues to contend that the “Examiner’s argument . . . is flawed” (Reply Br. 4) since “it is unreasonable

to suggest that one would convert Agrawal to a rounding process because doing such would not improve Agrawal” (Reply Br. 5). Appellant’s arguments are premised on the contention that “*changing* Agrawal from a chopping-off process to a rounding process would prevent Agrawal from executing its feedback loop, would prevent Agrawal from ensuring that each output signal is a close approximation to each input signal, and would destroy the intended purpose of Agrawal” (Reply Br. 4 (emphasis added)). We are not persuaded by Appellant’s arguments because we find the record contradicts Appellant’s underlying contention that the Examiner’s combination of references somehow eliminated Agrawal’s chopping-off process and substituted Denk’s rounding process. The Examiner identifies, as reproduced *supra*, that the Denk rounding off process is added “into” Agrawal (*see* Ans. 5). Though asserted by Appellant, we fail to find that the Examiner anywhere identifies or suggests changing Agrawal from a chopping-off process to a rounding process by eliminating any chopping-off or truncating processes. Appellant’s assertions for such a modification are without citation to corroborating evidence from the record. We find the Examiner consistently identified incorporating Denk’s rounding process into Agrawal’s truncating process, e.g., *see* Ans. 5.

For the foregoing reasons, we sustain the rejection of representative claim 1 and also the rejection of the other independent claims 9 and 13.

Further, we sustain the rejection the dependent claims 2-4, 10-12, 17-20, which are not separately argued.

Claims 14-16

Appellant asserts patentability for these claims by relying on the same arguments addressed *supra* for base claim 1 (App Br. 9-11). As also addressed *supra*, we disagree with Appellant's relied-on arguments, and instead, agree with the Examiner's conclusion that claim 1 is unpatentable over the identified combination under 35 U.S.C. § 103(a) of Agrawal and Denk (Ans. 4-5).

Appellant finally contends that the APA fails to remedy asserted Agrawal and Denk deficiencies (App. Br. 11), which we conclude is a moot contention in view of our not finding Agrawal and Denk to be deficient.

Accordingly, we sustain the rejection of claims 14-16.

ORDER

The Examiner's decision rejecting claims 1-4 and 9-20, is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

gvw